What is claimed is:

1. A method for hypothermia and rewarming of the cerebrospinal fluid in the brain comprising of:

(a) a cooling element externally placed in contact with the skin overlying the cerebrospinal fluid cisterns at the back of the head and spine regions of a patient;

(b) simultaneously with (a) having a rewarming element over the same regions;

(c) providing cooling from a coolant;

(d) rewarming by heat transfer from an electric blanket or heated liquid filled blanket;

(e) accomplishing heat exchange with the cerebrospinal fluid by conduction through the skin;

(f) altering the afferents from peripheral nerves on the skin that reflect receptors of warmth and cold;

(g) the heat exchange spreading throughout the brain and spinal cord by the pulsatile movement of cerebrospinal fluid;

(h) altering the temperature of cerebrospinal fluid and blood bathing the brain thermoregulatory centers;

(i) particularly altering the central and peripheral afferents to the neurons in both the preoptic anterior hypothalamus and posterior hypothalamus; and

(j) resetting the body temperature based on the temperature of the cerebrospinal fluid and skin overlying cisterns in the region of the head and spine.

2. The method of claim 1, wherein said coolant is selected from the group consisting of: a refrigerated liquid, an expanding gas, and a vaporizing liquid.

3. The method of claim 1, wherein said coolant is selected from the group consisting of: HCFs, CFCs, chlorodifluoromethane, polydimethylsiloxane, ethyl alcohol, liquid nitrogen, pentafluoroethane, nitrous oxide, carbon dioxide and distilled water.

4. The method of claim 1, wherein the said coolant is recyclable by a pump action through a system of pipes within the cooling element compactly packed to allow administration of hypothermia during transport of patients in an ambulance.

5. The method of claim 1, wherein the cooling and rewarming elements are placed over the anterior and posterior fontanelle of the head of a neonatal patient.

6. The method of claim 1, wherein the cooling and rewarming elements are contained within a material made of vulcanized rubber and shaped to fit the back of the head, the spinal cervical lordosis, thoracic kiphosis and lumbal lordosis for maximum contact with skin and bone overlying the cerebrospinal fluid in the cisterns.

7. The method of claim 1, wherein the cooling element consists of non-refillable packs stored for cooling in freezers or refrigerators and shaped to fit the back of the head, the spinal cervical lordosis, thoracic kiphosis and lumbal lordosis for maximum contact with skin overlying the cerebrospinal fluid in the cisterns, and anatomically designed to avoid pressure and contact cooling of the carotid arteries.

8. The method of claim 1, further including a system of neurointensive care monitoring devices for providing the physiologic and biochemical indices of brain function, said neurointensive care devices operatively responsive to depth

of hypothermia.

9. A method for hypothermia and rewarming of the cerebrospinal fluid in the brain comprising of:

(a) heat-exchange ventricular catheter;

(b) simultaneously with (a) having a drainage ventricular catheter;

(c) catheter internally implanted into the cerebral ventricle through a burr hole or twist drill;

(d) catheters placed within the ventricle using ventricular catheter introducer anchored into a slit and perforated hole close to the distal ends of the catheters respectively;

(e) the distal end of the catheter placed above the level of foramen Monro within the ventricle;

(f) the proximal end of the heat-exchange catheter connected to an infusion system;

(g) simultaneously with (f) the proximal end of the drainage catheter is connected to a ventriculo-peritoneal or ventriculo-atrial shunting system;

(h) infusion system containing sterile physiologic solution being at a temperature other than that of the cerebrospinal fluid;

(i) sterile physiologic solution flowing in a fluid line into the heat-exchange catheter;

(j) sterile physiologic solution of known chemical constituents;

(k) sterile physiologic solution prepared to preserve cell metabolic energy stores;

(l) infusion pump programmed to deliver the sterile physiologic solution at a predetermined rate;

(m) sterile physiologic solution directly infused into the cerebral ventricles;

(n) sterile physiologic solution mixing with cerebrospinal fluid and altering the temperature of the fluid bathing the regulatory centers in the brain;

(o) sterile physiologic solution mixing with the chemistry of the cerebrospinal fluid bathing the regulatory centers in order to maintain neuronal viability;

(p) drainage catheter providing means of drainage of excess cerebrospinal fluid to maintain the desired intracranial pressure;

(q) heat exchange spreading throughout the brain and spinal cord by the pulsatile movement of cerebrospinal fluid;

(r) altering the temperature of cerebrospinal fluid and blood bathing wider brain areas including those involved in regulation of temperature, pain, and emotional stress;

(s) altering the central afferents to the neurons in both the preoptic anterior hypothalamus and posterior hypothalamus;

(t) resetting the body temperature based on the temperature of the cerebrospinal fluid;

(u) modulating physical pain by promoting antinociceptive response;

(v) reducing psychological pain by reducing stimulation of periaqueductal gray area of the brain stem;

(w) reducing intracranial pressure by physical contraction of the cerebrospinal fluid volume in response to hypothermia;

(x) reducing intracranial pressure and spinal subdural pressure gradients by drainage of excess cerebrospinal fluid;

(y) improving neuronal cell energy stores by decreasing the cerebral metabolic rate; and

(z) reducing overall brain temperature by reducing metabolic heat production.

10. The method of claim 9, wherein the drainage catheter is connected to a cerebrospinal fluid flow control valve attached to an implanted peritoneal or atrial catheter.

11. The method of claim 9, wherein both the heat-exchange and drainage catheters are made of silicone elastomer tubing impregnated with white barium sulfate to provide radiopacity.

12. The method of claim 9, wherein the heat exchange and drainage catheter are physically joined together to form a single double barrel catheter.

13. The method of claim 9, wherein the depth of hypothermia is determined by the temperature of the cooled sterile physiologic solution and the flow rate of the infusion pump.

14. The method of claim 9, further including a system of neurointensive care monitoring devices for providing the physiologic and biochemical indices of brain function, said neurointensive care devices operatively responsive to set threshold changes in cerebral autoregulation, cerebral vasoreactivity and depth of hypothermia.

15. A method for hypothermia and rewarming of the cerebrospinal fluid in the brain comprising of:

(a) heat-exchange catheter which comprises:

(i) a cerebral ventricular catheter forming a blind loop at the distal end for heat exchange;

(ii) an efferent arm for inflow of heat-exchange fluid;

(iii) an afferent arm for outflow of heat-exchange fluid;

(iv) proximal end with an inlet and outlet to the catheter lumen through

which the heat-exchange fluid flows continuously;

(b) loop catheter placed within the cerebral ventricle using a ventricular catheter introducer anchored to a perforated hole in the middle between the distal ends of the blind loop;

(c) the distal loop of the catheter is placed above the level of foramen Monro within the ventricle;

(d) the inlet and outlet of the heat-exchange catheter are connected to a continuous fluid line operatively linked to a circulating pump;

(e) the heat-exchange fluid being at a temperature other than that of the cerebrospinal fluid;

(f) the heat-exchange fluid within the loop catheter being operative to exchange heat with the cerebrospinal fluid in the ventricles;

(g) the heat exchange spreading throughout the brain and spinal cord by the pulsatile movement of cerebrospinal fluid;

(h) altering the temperature of cerebrospinal fluid and blood bathing the brain thermoregulatory centers;

(i) altering the central afferents to the neurons in both the preoptic anterior hypothalamus and posterior hypothalamus;

(j) resetting the body temperature based on the temperature of the cerebrospinal fluid;

(k) modulating physical pain by promoting antinociceptive response;

(l) reducing psychological pain by reducing stimulation of periaqueductal gray area of the brain stem;

(m) reducing intracranial pressure by physical contraction of the cerebrospinal fluid volume during cooling;

(n) improving neuronal cell energy stores by decreasing the cerebral metabolic rate; and

(o) reducing overall brain temperature by reducing metabolic heat production.

16. The method of claim 15, wherein the heat-exchange fluid is a refrigerated sterile physiologic solution, sterile distilled water or coolant.

17. The method of claim 15, wherein the heat-exchange fluid is a sterile physiologic solution or sterile distilled water at body temperature.

18. The method of claim 15, wherein the loop catheter is made of silicone elastomer tubing impregnated with white barium sulfate to provide radiopacity.

19. The method of claim 15, wherein the depth of hypothermia is determined by the temperature of the cooled fluid and the infusion flow rate.

20. The method of claim 15, further including a system of neurointensive care monitoring devices for providing the physiologic and biochemical indices of brain function, said neurointensive care devices operatively responsive to set threshold changes in cerebral autoregulation, cerebral vasoreactivity and depth of hypothermia in a dynamic servo-feedback and feed-forward loop of a computerized algorithm.